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| APPLICATION NO.                      | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/825,547                           | 04/14/2004  | Joe E. Stout         | 10012068-4          | 9111             |
| 7590 07/19/2006                      |             |                      | EXAMINER            |                  |
| HEWLETT-PACKARD COMPANY              |             |                      | PHAM, HAI CHI       |                  |
| Intellectual Property Administration |             |                      | ART UNIT            |                  |
| P. O. Box 272400                     |             |                      | PAPER NUMBER        |                  |
| Fort Collins, CO 80527-2400          |             |                      | 2861                |                  |

DATE MAILED: 07/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/825,547

Applicant(s)

STOUT ET AL.

Examiner

Hai C. Pham

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2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 22-24, 26, 27 and 43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-24, 26-27, 43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. The indicated allowability of claims 2-24, 26-27 and 43 are is withdrawn in view of the newly discovered references to Leban (US 5,229,785) and Chan et al. (US 4,694,308). Rejections based on the newly cited references follow.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 22-24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leban (US 5,229,785) in view of Chan et al. (US 4,694,308).

Leban discloses an ink jet print head assembly comprising a heating element (heater resistor element 36) on a substrate surface (substrate 34), and a cover layer on the substrate surface, the cover layer defining a firing chamber (firing chamber 32) formed about the heating element and defining a nozzle (orifice 20) over the firing chamber, wherein the cover layer includes a nozzle layer that defines the nozzle (orifice plate layer 14 having orifice openings 20), a photon barrier layer that at least partially defines the nozzle (the barrier layer 22 is photolithographically defined to shape the firing chamber 32 to be aligned with the orifice 20) and a top coat layer (metal film layer

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52 provided on the outer surface of the plastic orifice plate layer 58), wherein at least one of the layers includes a dry film (the orifice plate layer 52 and the barrier layer 22 are made of plastic material, VACREL, in the form of a dry film (col. 5, lines 18-45 and col. 6, lines 56-67). Leban further teaches a primer or passivation layer being formed on top of the heater resistor element, the passivation layer being resistant to the ink and served to protect the heater resistor element (col. 1, lines 53-56).

Leban fails to teach the chamber layer such that the photon barrier layer is formed between the chamber layer and the nozzle layer (claim 22), and the primer layer and the chamber layer partially defining the firing chamber (claim 23).

Chan et al. discloses in Fig. 3 an ink jet print head assembly comprising a heating element (heater resistor 50) on a substrate surface (silicon substrate 40), and a cover layer on the substrate surface, the cover layer defining a firing chamber (space above the heater resistor 50 forming the ink flow port 58) formed about the heating element and defining a nozzle (orifice 32) over the firing chamber, wherein the cover layer includes a primer layer (passivation layer 53), a chamber layer (layer 53 disposed between the passivation layer 53 and the barrier layer 26 forming the bottom plate of the firing chamber), a nozzle layer (orifice layer 16), a barrier layer (barrier layer 26) between the nozzle layer and the chamber layer that at least partially defines the nozzle, and wherein the passivation layer (53) and the chamber layer (53) partially define the firing chamber.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Leban to include the heating

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chamber barrier layer as taught by Chan et al. for the purpose of enclosing the heating of the firing chamber.

4. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leban in view of Chan et al., as applied to claim 22 above, and further in view of Mrvos et al. (U.S. 6,409,312)

Leban, as modified by Chan et al., discloses all the basic limitations of the claimed invention except for the cover layer including at least two SU8 layers.

Mrvos et al. discloses an ink jet printer and a process of fabricating the ink jet print head, wherein the first and second layers (44 and 52) forming the cover layer to define the firing chamber (ink chamber 46) and the nozzle (50), respectively, are photo-imaged polymer, dry film or SU8 layers (col. 5, lines 53-65).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the cover layer of Leban device with SU8 layers as taught by Mrvos et al. The motivation for doing so would have been to provide a malleable material and a simple method for processing the ink jet print head with accurate alignment between the resistor and the associated nozzle as suggested by Mrvos et al. at col. 5, lines 45-51.

5. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leban in view of Chan et al., as applied to claim 22 above, and further in view of Radke et al. (U.S. 5,859,654).

Leban, as modified by Chan et al., discloses all the basic limitations of the claimed invention except for the outer edge of the chamber layer being offset from a respective outer edge of the primer layer to expose a surface of the primer layer. Radke et al. discloses an ink jet print head comprising a heating element (not shown) on a substrate surface (29), a cover layer on the substrate surface, the cover layer defining a firing chamber (ink chamber 32) formed about the heating element and defining a nozzle (orifice 17) over the firing chamber, wherein the cover layer includes a primer layer (intermediate layer 27), a chamber layer (barrier layer 24), a nozzle layer (orifice plate 14). Radke et al. further teaches the outer edge of the firing chamber (32) being offset to expose a surface of the prime layer (intermediate layer 27) (Fig. 1).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Leban by arranging the firing chamber to be offset from the edge of the primer layer as taught by Radke et al. The motivation for doing so would have been to provide sufficient exposed area for power connection.

### ***Response to Arguments***

6. Upon further consideration, a new ground of rejection is made in view of Leban (US 5,229,785) and Chan et al. (US 4,694,308).

***Pertinent Prior Art***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ahn et al. (US 6,328,430) discloses an ink injecting device comprising a heating element (heating resistor layer 11) on a substrate surface (substrate 1), and a cover layer on the substrate surface, the cover layer defining a firing chamber (ink chamber 9) formed about the heating element and defining a nozzle (nozzle 10) over the firing chamber, wherein the cover layer includes a chamber layer (heating chamber barrier layer 5 that encloses the heating resistor layer 11), a nozzle layer (nozzle plate 8), a barrier layer (ink chamber barrier layer 7) disposed between the nozzle plate (8) and the chamber layer (5).

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM  
PRIMARY EXAMINER

July 15, 2006